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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/944,545	08/31/2001	Donald R. Mullen	1726.7221000	3037

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[REDACTED] EXAMINER

OWENS, DOUGLAS W

[REDACTED] ART UNIT [REDACTED] PAPER NUMBER

2811

DATE MAILED: 12/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/944,545	MULLEN ET AL.
	Examiner Douglas W Owens	Art Unit 2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 23 October 2002.
- 2a) This action is FINAL.                  2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) 7-13,20,21,25,27,34 and 35 is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-6,15-19,22-24,26,28-32 and 36-41 is/are rejected.
- 7) Claim(s) 14 and 33 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on 23 October 2002 is: a) approved b) disapproved by the Examiner.  
 If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
 a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Drawings*

1. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on October 23, 2002 have been approved. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 28 – 30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 28 recites the limitation, "...wherein the plate portion is formed in a pre-loaded shape...". The scope of the claim is vague since it is not known what the term "pre-loaded shape" encompasses.

### *Claim Rejections - 35 USC § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 16-19, 31-32 and 36-40 are rejected under 35 U.S.C. 102(b) as being anticipated by US patent No. 5,783,461 to Hembree.

Regarding claim 1, Hembree teaches an IC cover (Figs. 1 & 2) comprising:

- a plate portion (24);
- an attachment portion (under spring portion (22)); and
- a spring portion coupled to the plate.

Regarding claim 16, Hembree teaches an IC cover, wherein the spring portion includes a plurality of individual spring elements, wherein a first one of the plurality of individual spring elements is disposed at a first end of the plate portion and a second one of the plurality of individual spring elements is disposed at a second end of the plate portion.

Regarding claims 17 and 19, Hembree teaches an IC cover, wherein the spring elements are disposed around a perimeter of the plate portion.

Regarding claim 18, Hembree teaches an IC cover, wherein at least one of the spring elements is maintained in a non-relaxed state.

Regarding claim 31, Hembree teaches an IC assembly (Fig. 2) comprising:

- a circuit board (16);
- a first die (12) disposed on a first surface of the circuit board; and
- a cover including:
  - a plate portion (24) disposed so as to cover the first die;
  - an attachment portion (directly under spring (22)) attached to the circuit board; and
  - a spring portion (22) coupled to the plate portion and the attachment portion.

Regarding claim 32, Hembree teaches an assembly, wherein the spring portion exerts pressure between the plate portion and the first die.

Regarding claim 36, Hembree teaches an IC cover comprising:  
a plate portion (24) having a plurality of edges;  
a plurality of attachment portions (located under spring (22)); and  
a plurality of spring portions coupled to the plate portion and attachment portions, wherein the springs are oriented along a direction corresponding to the plurality of edges.

Regarding claim 37, Hembree teaches an IC cover, wherein center lines of the springs are oriented so as to be non-radial relative to a centroid of the plate portion.

Regarding claim 38, Hembree teaches an IC cover, wherein each of center lines of the spring portions are oriented approximately tangentially in relation to a corresponding one of the plurality of edges.

Regarding claim 39, Hembree teaches an IC cover, wherein the spring portions are oriented in a similar rotational direction with respect to a centroid of the plate portion.

Regarding claim 40, Hembree teaches an IC cover, wherein the plurality of spring portions are configured to cooperatively accommodate displacement of the plate portion from a relaxed position.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 2 – 6, 15 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hembree as applied to claim 1 above, and further in view of US patent application publication No. 2002/0079571 to Takeuchi et al.

Regarding claims 2 and 26, Hembree does not teach an IC cover that is unitarily molded of a polymer material. Takeuchi et al. teaches an IC cover, that is unitarily molded of a polymer material (section [0020] third and fifth sentence). It would have been obvious to one of ordinary skill in the art to incorporate the teaching of Takeuchi et al. into the device taught by Hembree, since the polymer material is a known material that is well suited for the intended use. The selection of a known material based on its suitability for its intended use supported a *prima facie* obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Hembree does not explicitly teach that the spring portion is a polymer material. Hembree teaches that the spring portion can be formed of an elastomeric material. It would have been obvious to select a polymer material since it is a known material that is well suited for the intended use.

Regarding claim 3, neither Hembree nor Takeuchi et al. teach an IC, wherein cover, wherein the polymer material has a thermal conductivity of at least 10 watts/meter. Takeuchi et al. teaches that it is desirable to remove excess heat from integrated circuits, as is known in the art. It would have been obvious to one of ordinary

skill in the art to provide a polymer material having good thermal conductivity, since it is desirable to remove heat from the IC.

Regarding claim 4, Hembree does not teach an IC cover, further comprising a heat sink coupled to the plate. Takeuchi et al. teaches an IC, wherein a heat sink is coupled to the plate. It would have been obvious to one of ordinary skill in the art to incorporate the heat sink taught by Takeuchi et al. into the device taught by Hembree, since it is desirable to remove excess heat from the IC.

Regarding claim 5, Hembree does not teach an IC cover, wherein the heat sink portion includes extended surfaces. Takeuchi et al. teaches an IC cover, wherein the heat sink includes extended surfaces. It would have been obvious to one of ordinary skill in the art to incorporate the teaching of Takeuchi et al. into the device taught by Hembree for reasons cited above.

Regarding claim 15, Hembree teaches an IC cover, wherein the spring portion is disposed at an end of the plate portion.

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hembree and Takeuchi et al. as applied to claim 5 above, and further in view of US patent No. 6,349,032 to Chan et al.

Hembree and Takeuchi do not teach a device, wherein the heat sink portion includes fins. Chan et al. teaches an IC, wherein the heat sink portion includes fins (Fig. 1 (14)). It would have been obvious to one of ordinary skill in the art to incorporate the heat sink with fins into the device taught by Hembree and Takeuchi since it is a well

known heat sink structure and it is desirable to provide a means for efficient removal of excess heat from the IC.

9. Claims 22 – 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hembree as applied to claim 1 above, and further in view of Chan et al.

Hembree does not teach an IC cover including a heat sink with extended surfaces comprising fins. Chan et al. teaches an IC including a heat sink with extended surfaces comprising fins. It would have been obvious to one of ordinary skill in the art to incorporate the heat sink taught by Chan et al. into the IC taught by Hembree, since it is desirable to remove excess heat from the IC.

10. Claim 14 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

11. Applicant's arguments filed October 23, 2002 have been fully considered but they are not persuasive. The applicant argues that the term "pre-loaded shape" is defined in lines 17 – 23 of page 20. The examiner has reviewed this section text and the remainder of the disclosure. It is not seen where the term "pre-loaded shape" is defined in the specification.

12. Applicant's arguments with respect to claims 1-6, 15-19, 22-24, 26, 28-32 and 36-41 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas W Owens whose telephone number is 703-308-6167. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 703-308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

DWO  
December 19, 2002

*Tom* *D. Owens*  
TOM THOMAS  
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